Title: Probability distributions on metric groups

Author: Josef Ondřej

Department: Department of Probability and Mathematical Statistics

Supervisor: prof. RNDr. Josef Štěpán, DrSc., Department of Probability and Mathematical Statistics

Abstract: In this thesis we deal with the space of Borel probability measures at first on a metric space and later on a metric group. We define the notion of a weak convergence of Borel probability measures and in a special case we show this convergence is metrizable. Further we introduce operation of convolution of Borel probability measures on a metric group and we show that together with this operation the space of measures becomes a topological semigroup. We use the notion of convolution to define idempotent and Haar measure and we show a relation between them. Finally we use the mentioned results to describe all solutions of Choquet problem. At the end we demonstrate how the theory that we have developed applies to a group of complex units.

Keywords: Metric group, weak convergence, Prokhorov's theorem, Choquet's theorem.